MCKV Institute of Engineering

243 G. T. Road (N), Liluah, Howrah – 711204

Subject: **Object Oriented Programming Lab** Code:**PC-CS592**
Stream: CSE Credit: 1.5

Assignment: - 01/ ***Introduction to JAVA Program and concept of Data Types***

A. Write a java program to print MCKVIE and Computer Science & Engineering. Apply \n in your program.
B. Write a java program which will take radius of a Circle as user input and calculate area and perimeter to display the results.
C. Using command line argument write a java program to print Object Oriented Programming Using Java.

Assignment: - 02/ ***Concept of Variables and Operators***

A. Write a java program to swap two variables using and without using third variable.
B. Consider the basic pay of an employee as user input. AGP is 50% of the basic pay. Company provides 50% DA and 15% HRA on the merged basic(Basic+AGP). Write a java program to calculate and display total salary of the employee.

Assignment: - 03/ ***Concept of Operators and Conditional Statement***

A. Write a java program to identify largest among three numbers using Conditional Operator.
B. In general an equation of the form $ax^2 + bx + c = 0$ is known as a quadratic equation. Accept the values of a, b, and c from the user and write a java program to calculate the roots of the given quadratic equation.
C. Write a java program to check whether a year is Leap Year using conditional operator.

Assignment: - 04/ ***Concept of Loop Structure and Use of break keyword***

A. Write a java program to calculate $y = x^n$, where x and n are user inputs, using loop.
B. Write a java program to generate Fibonacci Series up-to n terms using loop.
C. Write a java program to generate all Prime Numbers within a range, where range is user input.
D. Write a java program to reverse a number and check whether it is a Palindrome.
E. Write a program to check a given number is a magic number or not. A number is said to be a Magic number if the sum of its digits are calculated till a single digit is obtained by recursively adding the sum of its digits. If the single digit comes to be 1 then the number is a magic number. Example- 199 is a magic number as 1+9+9=19 but 19 is not a single digit number so 1+9=10 and then 1+0=1 which is a single digit number and also 1. Hence it is a magic number. Print all the magic numbers within a given range.

Assignment: - 05/ ***Loop Structure continued…***

A. Write three separate java programs to generate the following patterns:

```
*
* *
* * *
* * * *
* * * * *
```

```
A
B C
D E F
G H I J
K L M N O
```

```
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
```

B. An automorphic number is the number which contained in last digit(s) of its square. Example 25 is an automorphic number as its square is 625 and 25 is present as the last two digits. Print all automorphic numbers within range 11 to 40.

C. A number is said to be a special number, if the sum of the factorial of the digits of a number is same as the original number. Example-145 is a special number, because 1! + 4! + 5! =145. Print all special numbers within range 100 to 999.

Home Assignment

D. A composite magic number is positive integer which is composite as well as magic number. Composite number is a number that has more than two factors (For example 10, factors are 1, 2, 5, 10). A magic number is a number in which eventual sum of the digits is equals to 1(For example 28 = 2+8= 10=1+0=1). Write a java program which accepts two positive integer m and n, where m is less than n. Display the composite magic positive integers that are in range between m and n (both inclusive) and output them along with frequency.
Example- m=10 and n=100
Composite magic integers are 10, 28, 46, 55, 64, 82, 91, 100
Frequency of composite magic integers is 8.

E. A circular prime number is a prime number that remains prime under cyclic shifts of digits. When the leftmost digit is removed and replaced at the end of remaining string of digits, the generated number is still prime. The process is repeated until the original number is reached again. A number is said to be prime if it has only two factors 1 and itself. Write a java program which will accept a positive number N and check whether it is a circular prime or not. The new numbers formed after shifting of digits should also be displayed.
Example- 131 – 311 – 113 [131 is Circular Prime]
197 – 971 – 719 [197 is Circular Prime]
1193 – 1931 – 9311 -3119 [1193 is circular Prime]
29 – 92 [29 is not circular prime]

1.

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Signatures of the Faculty Members Signatures of HOD (CSE)